Section 833—Joint Fillers and Sealers

833.1 General Description

This section includes the requirements for joint fillers and sealers, as follows:

Joint Sealers	Joint Fillers
• Hot-poured • Preformed elastic • Silicone sealant and bond breaker For bridge decks: • Neoprene • Ethylene propylene diene monomer For inductive loops: • Polyurethane sealant	• Preformed • Preformed foam • Water-blown urethane • Elastomeric polymer type joint compound

833.1.01 Related References

A. Standard Specifications

Section 106–Control of Materials

Section 461–Sealing Roadway and Bridge Joints and Cracks

B. Referenced Documents

AASHTO		ASTM		
M 153	C 679	D 471	D 822	D 1622
M 213	C 793	D 573	D 1056	D 1623
M 220	C 1016	D 746	D 1171	D 1752
T 42	D 412	D 792	D 1149	D 2240

GDT 15

GDT 47

GDT 62

GDT 70

GDT 106

QPL 20

QPL 66

QPL 75

833.2 Materials

833.2.01 Preformed Joint Filler

A. Requirements

General Provisions 101 through 150.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Use preformed joint filler that meets either AASHTO M 153 or AASHTO M 213 requirements. For a list of sources, see QPL 20.

Ensure that cellulose fiber types meet the requirements of AASHTO M 213 (except for the asphalt content) and contain minimums of 0.2 percent zinc borate as a preservative and 1.5 percent waterproofing wax.

D. Materials Warranty

General Provisions 101 through 150.

833.2.02 Hot-Poured Joint Sealers

A. Requirements

1. Type

   Use a hot-poured joint sealer that is a mixture of materials compatible with asphalt, with or without rubber. The sealer shall have the following characteristics:

   - Forms a resilient and adhesive compound
   - Effectively seals joints and cracks in pavements against moisture during repeated cycles of expansion and contraction
   - Does not flow from the joint and cannot be picked up by vehicle tires at an ambient temperature of 125 °F (50 °C)

2. Compound Characteristics

   Use a compound that has a uniform pouring consistency capable of completely filling joints without forming large air holes or discontinuities.

   a. Do not pour if the compound temperature is above 450 °F (230 °C).

   b. Follow the pouring temperature and safe heating temperature set by the compound manufacturer for each lot or batch.

   c. Be sure the temperatures are shown on the label. The safe heating temperature is defined as the highest temperature to which the sealing compound can be heated and still meet all the requirements.

3. Physical Characteristics

   Use a hot-poured joint sealer that has the following properties:

Property	Required Measurement
Penetration	Less than 0.35 in (9 mm.)
Flow	Less than 0.12 in (3 mm).
Resilience	Minimum recovery of 60%.
Bond to concrete 0 °F, ± 2 °F (–18 °C, ± 1 °C)	The compound does not separate or have gaps within or between the compound and the blocks.
Compatibility (with asphaltic concrete)	Adhesion does not fail. Oily exudate does not form at the interface between the sealing compound and the asphaltic concrete. The sealant does not soften or have deleterious effects on the asphaltic concrete.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will test as follows:

Test	Method
Hot-poured joint sealers	GDT 62

D. Materials Warranty

General Provisions 101 through 150.

833.2.03 Elastomeric Polymer Type Joint Compound

A. Requirements

1. Type

   Furnish elastomeric polymer-type joint sealing compound in two components—a base compound and a curing agent.

   a. Base compound: A gasoline-resistant elastometric polymer modified with plasticizers, activators, and inert fillers.

   b. Curing agent: A blend of accelerators and extenders.

2. Compound Characteristics

   Use a sealing compound that can be mixed to a homogenous consistency at the site and applied by an approved mechanical device or poured and troweled manually.

   a. If a compound is to be machine-mixed and applied, it shall have a minimum work life of 5 minutes at 80 ºF, ± 5 ºF (27 ºC, ± 3 ºC).

   b. If a compound is to be manually mixed and applied, it shall have a minimum work life of 30 minutes at 80 ºF, ± 5 ºF (27 ºC, ±3 ºC).

   c. Use a mixture that completely fills the joints without forming air holes or discontinuities, when mixed according to the manufacturer's instructions.

   d. Use a compound that is self-leveling when placed in the joint, but that does not show appreciable flow or movement along a superelevated joint.

   e. Use material that does not soften or show any apparent defect after being immersed in water for 7 days.

   f. Use a material that forms a tack-free, rubber-like compound that seals pavement or bridge joints within 24 hours of application.

3. Physical Properties

   Use material that has the following physical properties:

Property	Required Measurement
Cone penetration	Between 0.1 in (2.5 mm) and 0.39 in (10 mm)
Flow	No appreciable flow
Resilience (air- and oven-cured samples)	Minimum recovery of 75%
Bond	No cracks, separation, or other opening over 1/ 4 in. (6 mm) deep in the sealer or between the sealer and block
Solubility	Not to exceed 2 percent; no apparent defects that affect the material as a sealant

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will test as follows:

Test	Method
Elastomeric joint compound	GDT 15

D. Materials Warranty

General Provisions 101 through 150.

833.2.04 Preformed Elastic Joint Sealer

A. Requirements

This section also covers adhesives and lubricants for the sealers.

1. Type

   Use a preformed elastic joint sealer that is a vulcanized elastomeric compound using polymerized chloroprene as the only basic elastomer. The joint sealers include both open and closed cell sealers.

2. Certification
   a. Submit certified test results of each lot of the joint sealer materials furnished to each Project, either from your tests or from the manufacturer of the preformed joint sealer.
   b. The Department will conduct the joint sealer recovery test on random samples from each shipment received or each manufacturer's lot.
   c. Submit certified test results of each lot of the lubricant furnished to each Project, either from your tests or from the manufacturer of the joint sealer lubricant/adhesive or adhesive.

3. Preformed Open Cell Joint Sealer
   a. Bridge and Roadway Seals: Use sealer that meets the following physical requirements:

Physical Property	Requirement
Tensile strength	Min. 2,000 psi (14 MPa)
Elongation at break	Min. 250%
Hardness, Type A durometer	55±5
Oven aging, 70 hours @ 212 °F (100 °C) Tensile strength, change Elongation, change Hardness, change	 Max. -30% Max. -40% +10 points
Oil swell, ASTM oil No. 3: Volume change, 70 hrs. @ 212 °F (100 °C)	 Max. 80%
Ozone resistance, 20% strain: 300 pphm in air, 70 hrs. @ 100 °F (38 °C) (wipe with solvent to remove surface contaminants)	 No cracks
Joint sealer recovery under 50% deflection: Recovery after 70 hrs. @ 212 ºF (100 ºC) Recovery after 72 hrs. @ 14 ºF (-10 ºC) Recovery after 22 hrs. @ –20 ºF (-29 ºC)	 Min. 85% Min. 88% Min. 83%

   b. Bridge Seals: Use a sealer that meets the following compression/deflection requirements:

Nominal Size, in (mm)	Movement Capability*, In (mm)	Min. Force 4 lb. per linear inch (18 N per 25 mm) @ Width, in (mm)	Min. Force–30 lb per linear inch (133 N per 25 mm) Max. Force–100 lb per linear inch (445 N per 25 mm) @ Width in (mm)
2 (50)	13/16 (20)	1-7/8 (47)	1-1/16 (27)
2-1/2 (63)	1-1/8 (28)	2-3/8 (60)	1-1/4 (32)
3 (75)	1-3/8 (34)	2-7/8 (73)	1-1/2 (38)
3-1/2 (88)	1-5/8 (40)	3-3/8 (86)	1-3/8 (34)
4 (100)	1-3/4 (43)	3-7/8 (98)	2-1/8 (54)

*Movement capability is the movement allowed within the widths of the specified maximum and minimum forces. The design maximum and minimum joint width is based on these widths. The installation width depends on the temperature at the time of installation.

c. Roadway Seals: Use a compression/deflection sealer that accommodates the movement specified on the Plans with a minimum force of 4 lbs per linear inch (18 N per linear 25 mm), not exceeding 20 lbs per linear inch (89 N per linear 25 mm), exerted on the joint faces.

4. Preformed Closed Cell Joint Sealer for Roadways

a. Use a preclosed cell polychloroprene joint sealer that meets the following physical requirements:

Physical Property	Requirement
Dimensions	Meet Plan requirements for movement and depth
Surfaces	Smooth and clean
Compression/deflection	Allow movement specified on the Plans with a minimum force of 4 lbs per linear inch (18 N per linear 25 mm) exerted on the joint faces and maximum deflection equal to 50% of the original width
Joint sealer recovery under 50% deflection	85% recovery (compressed to half original thickness for 22 hours @ 158 ºF (70 ºC), then compression removed for 48 hours at room temperature) 85% recovery after 22 hours at 0 ºF (-18 ºC)
Water absorption	Maximum 5% weight increase
Ozone resistance	No cracking after exposure of sample at 20% strain to 100 pphm ozone for 70 hours at 100 ºF (38 ºC)

5. Joint Sealer Lubricants/Adhesives

a. Lubricant/Adhesive for Preformed Roadway Seals: Use a lubricant/adhesive with the joint sealer that is a one-component polychloroprene compound, containing only soluble phenolic resins blended with antioxidants and acid acceptors in an aromatic, hydrocarbon solvent mixture. The lubricant shall have the following physical properties:

Physical Property	Requirement
Average net weight per gallon (liter)	7.84 lbs (940 grams)
Solid content	22-28% by weight
Film strength Tensile strength Elongation before breaking	 Min. 2,300 psi (16 MPa) Min. 750%

b. Adhesive for Preformed Bridge or Roadway Seals: Use an adhesive that is a one-part moisture curing polyurethane and hydrocarbon solvent mixture with the following physical properties:

Physical Property	Requirement
Average net weight per gallon (liter)	Min. 8 lbs (960 grams)
Solids content	Min. 72% by weight
Film strength (ASTM D 412)	1,200 psi (8 MPa)
Elongation before breaking	350%
Viscosity	Perform suitably with the installation equipment Remain fluid from 5 to 120 ºF (-15 to 49 ºC)

6. Product Delivery

Deliver each lot of the lubricant/adhesive in containers plainly marked with the manufacturer's name or trademark, lot number, and date of manufacture.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

1. Preformed Open Cell Joint Sealer

Test	Method
Tensile strength and elongation	ASTM D 412
Hardness	ASTM D 2240
Oven-aging	ASTM D 573
Oil swell	ASTM D 471
Ozone Resistance	ASTM D 1149
Joint sealer recovery	GDT 47
Compression/Deflection	GDT 70

2. Preformed Closed Cell Joint Seals for Roadway

Test	Method
Compression/Deflection	GDT 70
Joint sealer recovery (Run the hot recovery at 158 ºF (70 ºC) instead of 212 ºF (100 ºC). Allow seals to recover for 48 hours at room temperature before measuring.)	GDT 47
Water Absorption	ASTM D 1056
Ozone Resistance	ASTM D 471

3. Joint Sealer Lubricants/Adhesives

Test	Method
Film Strength	ASTM D 412

D. Materials Warranty

For joint sealer lubricants/adhesives:

1. Store the lubricant/adhesive at 50 º to 80 ºF (10 º to 27 ºC).
2. Retest any lubricant/adhesive not used within 270 days of its manufacture.

833.2.05 Water-Blown Urethane Joint Filler

A. Requirements

1. Type

   Furnish water-blown urethane joint filler in two components.

   a. Mix according to the manufacturer's recommendations and use in pressure relief joints and regular expansion joints.

   b. Mix the material at the site and foam it in the joint. Use closed-cell material.

2. Physical Requirements

   a. Use the material that meets the following requirements after mixing:

Times at 80 ºF, ± 5 ºF (27 ºC, ± 3 ºC)	Minimum	Maximum
Cream time (interval after mixing the two components and before the material begins to expand).	1 minute	5 minutes
Expansion time (interval between when the material starts and stops expanding).		10 minutes
Tack free time (Determine whether the material is tack free by touching lightly. Begin the time requirement for tack free time when the expansion time ends.)		10 minutes

b. Use material that meets the following requirements after curing:

Physical Property	Requirement
Weight per cubic foot (meter)	4lbs, ± 0.4 lbs (64 kg, ± 6 kg)
Compression to 50% thickness	40 to 130 psi (275 to 895 kPa)
Recovery (compressed to 50% thickness, released, then tested 10 minutes later)	Min. 65%
Extrusion when compressed 50%	Max. 0.125 In (3 mm)
Moisture absorption	Max. 0.10 lb/ft.² (490 g/m²) of exposed area

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Weight per cubic foot (meter)	AASHTO T 42 [omit drying at 220 ºF (104 ºC)]
Compression to 50% thickness	AASHTO T 42
Recovery after compression	AASHTO M 213
Extrusion	AASHTO T 42
Moisture absorption	AASHTO T 42 (calculate absorption based on exposed area)

D. Materials Warranty

General Provisions 101 through 150.

833.2.06 Silicone Sealants and Bond Breakers

Prepare and install silicone and bond breakers according to Section 461.

A. Requirements

1. Silicone

   Furnish silicone sealant in a one-part or two part silicone formulation. Use sealant that is compatible with the surface to which it is applied. Do not use acid-cure sealants on Portland cement concrete.

   a. Use silicone that meets the physical requirements in Table 1. For a list of silicone joint sealant sources, please see QPL 66. Identify silicones as the following types:

      1) Type A—A one part, low modulus, non-sag silicone. Used to seal horizontal and vertical joints in Portland cement concrete pavements and bridges. Tooling is required.

      2) Type B—A one part, very low modulus, self-leveling silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges. Tooling is not normally required.

      3) Type C—A one part, ultra-low modulus, self-leveling silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges and joints between Portland cement concrete pavement and asphaltic concrete shoulders. Tooling is not normally required.

      4) Type D—A two part, ultra low modulus, self-leveling, rapid cure silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges and joints between Portland cement concrete pavement and asphaltic concrete shoulders. Tooling is not required.

   b. Use sealant that is compatible with the surface to which it is applied. Do not use acid-cure sealants on Portland cement concrete.

c. Use silicone that meets the following physical requirements:

Table 1—Physical Requirements for Silicone Sealants

Type Silicone	A	B	C	D
Tensile Stress at 150% Strain, Max. psi (kPa) (Note 1)	45 (310)	40 (275)	15 (105)	25 (175)
Durometer Hardness, Shore [0 °F and 77 °F ± 3 °F (-18 °C and 25 °C ± 2 °C)] (Note 1)	"A" 10-25	"00" 40-80	"00" 20-80	"00" 40-80
Bond to Concrete Mortar, Min. psi (kPa) (Note 1) (Note 3)	50 (345)	40 (275)	35 (240)	35 (240)
Tack Free Time (Skin-over) (Max. Minutes) (Note 2)	90	90	90	30
Extrusion Rate (Min. Grams/Minute) (Note 4)	75	90	100	200-550
Non-volatile (Min. %)	90	90	90	90
Specific Gravity	1.1 - 1.5	1.1 - 1.5	1.1 - 1.5	1.2 - 1.5
Shelf Life (from date of shipment)	6 Months	6 Months	6 Months	6 Months
Movement Capability & Adhesion (Note 1)	No adhesive or cohesive failure after 10 cycles at 0 °F (-18 °C).			
Ozone and U.V. Resistance (Note 1)	No chalking, cracking or bond loss after 5,000 hours.			
Note 1: The cure time for these specimens shall be 21 days for Type A and 28 days for Type B, C and D. Specimens shall be cured at 77 °F ± 3 °F (25 °C ± 2 °C) and 50±5% relative humidity.				
Note 2: At conditions of 77 °F ± 3 °F (25 °C ± 2 °C) and 50±5% relative humidity.				
Note 3: Type C and D silicone shall also meet its bond strength requirement to asphalt concrete.				
Note 4: Type D extrusion rate shall be within the range specified.				

2. Bond Breakers

Bond breakers shall be chemically inert and resistant to oils, gasoline, solvents, and primer, if one is required.

Install silicone sealants over a bond breaker to prevent the sealant from bonding to the bottom of the joint.

a. Use bond breakers that are chemically inert and resistant to oils, gasoline, solvents, and primer, if one is required.

b. Do not use bond breaker that will stain or adhere to the sealant.

c. Use either a backer rod or tape bond breaker.

1) Backer Rods

Type L	Closed-cell, expanded polyethylene foam
Type M	Closed-cell, polyolefin foam with a closed-cell skin over an open-cell core

Use backer rods that meet the following physical requirements:

Physical Property	Requirement
Density	2 lb/ft³ (30 kg/m³)min.
Tensile strength	25 psi (170 kPa) min.
Water absorption	0.02 g/cm³ max.

2) Bond Breaking Tapes

Type N bond breaking tapes are made from extruded polyethylene with a pressure-sensitive adhesive on one side.

Bond breaking tapes may be used with all three types of silicone, but is suitable for bridge joints only.

Bond breaking tapes shall have a minimum thickness of .005 in (0.13 mm.).

3. Joint Sealant Certification

   Submit, at no cost to the Department, a minimum of 30 gal (100 L) of material and certified test results on each lot of joint sealant furnished to a Project.

   Submit a certification that verifies the sealant meets all the test requirements of this Specification, except the Bond to Concrete Mortar and Shore Durometer Hardness at 0 ºF (-18 ºC).

B. Fabrication

Prepare and install silicone and bond breakers according to Section 461,.

C. Acceptance

1. Silicone

   Test the silicone as follows:

Test	Method
Tensile stress	ASTM D 412 (die C)
Durometer hardness	ASTM D 2240
Bond to concrete mortar	GDT 106
Tack free time (skin-over)	GDT 106*
Extrusion rate	GDT 106
Non-volatile	GDT 106
Specific gravity	ASTM D 792 (Method A)
Movement capability and adhesion	GDT 106
Ozone and UV resistance	ASTM C 793
*In cases of dispute, use ASTM C 679 as a referee test.	

2. Bond Breakers

   Test the bond breaker backer rods as follows:

Test	Method
Density	ASTM D 1622
Tensile strength	ASTM D 1623
Water absorption	ASTM C 1016

3. Department Responsibility

   The Department will:

   a. Evaluate the sealant in the field before accepting any silicone sealants that meet the requirements of this Specification.

   b. Install the material submitted by the Contractor in roadway and/or bridge joints. The material shall be in place for two winters without failure before being accepted.

   c. Reject any sealant or bond breaker that is evaluated and approved, yet fails in actual use.

D. Materials Warranty

General Provisions 101 through 150.

833.2.07 Neoprene for Bridge Deck Joint Seals

A. Requirements

1. Type

   Use a neoprene material for bridge deck joint seals that is a vulcanized elastomeric compound with polymerized chloroprene as the only basic elastomer.

   a. Ensure the neoprene meets the physical requirements in Table 2.

Table 2—Physical Requirements for Neoprene

Test	Requirements	Test Method
Tensile strength Before aging	1500 psi (10 MPa) min.	ASTM D 412
After oven-aging for 70 hrs. @ 212 ºF (100 ºC)	30% max. loss	ASTM D 573
Elongation at breaks Before aging	250% min.	ASTM D 412
After oven aging for 70 hrs. @ 212 ºF (100 ºC)	40% max.	ASTM D 573
Hardness Type A Durometer		
Before aging	63 ± 10 points	ASTM D 2240
After oven-aging for 70 hrs. @ 212 ºF (100 ºC)	0 to +15 points change	ASTM D 2240
After aging for 70 hrs. @ 14 ºF (-10 ºC)	0 to +15 points change	ASTM D 2240
Ozone Resistance: After 70 hrs. @ 104 ºF (40 ºC), under 20% strain in 300 pphm in air (Wipe specimens with toluene before test to remove surface contaminants)	No cracks	ASTM D 1149
Weight change in oil After 22 hrs. in oil No. 2 [ASTM D 471]	45% max.	AASHTO M 220
Recover under 50% deflection (type II only)		
After 70 hrs. @ 212 ºF (100 ºC)	85% min.	AASHTO M 220
After 72 hrs. @ 14 ºF (-10 ºC)	88% min.	AASHTO M 220
After 22 hrs. @ –22 ºF (-30 ºC)	85% min.	AASHTO M 220

2. Certification

   Submit certified test results on the joint seal system according to Subsection 106.05, “Materials Certification.”

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test according to the methods indicated in Table 2.

D. Materials Warranty

General Provisions 101 through 150.

833.2.08 Ethylene Propylene Diene Monomer for Bridge Deck Joint Seals

A. Submittals

1. Type

   Use an ethylene propylene diene monomer (EPDM) material for bridge deck joint seals that is 100 percent EPDM compound.

   Ensure the compound shall meet the following physical requirements:

Physical Property	Requirement
Hardness, Type A Durometer	80 ± 5
Tensile strength	Min. 2,000 psi (14 MPa)
Elongation at break	200%

Physical Property	Requirement
Low temperature	Not brittle at –67 ºF (-55 ºC)
Weather resistance	No cracks
Ozone resistance (70 hours, 100 ºF (38 ºC), under 20% strain, 100 pphm in air)	No cracks

2. Certification

   Submit certified test results of the joint seal system according to Subsection 106.05, "Materials Certification."

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test the EPDM as follows:

Test	Method
Hardness, Type A Durometer	ASTM D 2240
Tensile strength	ASTM D 412
Elongation at break	ASTM D 412
Low temperature	ASTM D 746
Weather resistance	ASTM D 1171
Ozone resistance (70 hours, 100 ºF (38 ºC) under 20% strain, 100 pphm in air)	ASTM D 1149

D. Materials Warranty

General Provisions 101 through 150.

833.2.09 Polyurethane Sealant for Inductive Loops

A. Requirements

1. Type

   Use polyurethane sealant that is a one component, moisture-curing, flexible sealant formulated to encapsulate inductive detector loop wires and leads embedded in asphaltic or Portland cement concrete. For a list of sources, see QPL 75.

2. Submit, at no cost to the Department, at least 12, 29 oz. (857 mL) cartridges of the material.

3. Physical Characteristics

   Use a sealant that will:

   - Remain flexible to –20 ºF (-30 ºC) (necessary to protect the wire from the stress of pavement movement).
   - Fully encapsulate the wire but resist flowing out on inclined or crowned roads.
   - Be compatible with asphaltic concrete.
   - Not soften the asphaltic concrete to a degree that would cause widening of the joint, when installed in a simulated joint in the laboratory.

4. Use a cured polyurethane sealant that meets the following physical requirements:

Physical Property	Requirement
Hardness, Type A Durometer	35-85
Tensile strength	Min. 150 psi (1035 kPa)
Elongation at break	Min. 200%
Flexibility 20 ºF (30 ºC)	No cracks
Weathering resistance	Slight chalking

5. Furnish certified test results of the loop sealant according to Subsection 106.05, "Materials Certification."

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

1. Test the polyurethane sealant for inductive loops as follows:

Test	Method
Hardness, Type A Durometer	ASTM D 2240
Tensile strength	ASTM D 412 [die C pulled at 20 in (500 mm)/min]
Elongation at break	ASTM D 412 [die C pulled at 20 in (500 mm)/min]
Flexibility –20 ºF (-30 ºC)	25 mil (0.64 mm) free film bend (180°) over a 1/2 in (13 mm) mandrel
Weathering resistance	ASTM D 822; Weatherometer 350 hrs., cured 7 days, 77 ºF (25 ºC), 50% relative humidity

2. Department Responsibility

The Department will:

a. Evaluate the polyurethane sealant for inductive loops in the field before approving it for use. The material also must meet the requirements of this Specification.

b. Install the material in asphaltic inductive loops. The material shall be in place for one winter without failure before being accepted.

c. Reject any sealant that is evaluated and approved, yet fails in actual use.

D. Materials Warranty

General Provisions 101 through 150.

833.2.10 Preformed Foam Joint Filler

A. Requirements

1. Type

Use a preformed foam joint filler consisting of polyethylene, polyurethane, neoprene, natural rubber, or isomeric polymer closed-cell foam and ultraviolet, stable resistant to oils, chemicals, ozone, and weathering. Ensure the joint filler conforms to the following physical requirements:

Test	Requirement
Cell Structure (Compression—Deflection to 50% of original thickness	Closed Cell 10 – 20 psi (70- 140 kPa)
Recovery (After 50% compression of original thickness)	95% min.
Water Absorption	1% volume max.
Extrusion at 50% compression of original thickness	0.25 in (6 mm)

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test according to ASTM D 1752.

D. Materials Warranty

General Provisions 101 through 150.